

## **EXHIBIT A**

## CURRICULUM VITAE

The Johns Hopkins University School of Medicine



(Typed Name): Ie-Ming Shih

(Date of this version): May 21, 2018

Dr. Ie-Ming Shih is the *Richard W. TeLinde* Distinguished Professor (Endowed Chair) of Gynecologic Pathology (1) and directs this inter-departmental research program at the Johns Hopkins Medical Institutions (2, 3). He also co-directs the *Breast and Ovarian Cancer Program* at the *Sidney Kimmel Comprehensive Cancer Center* at Johns Hopkins. Dr. Shih graduated from the *Taipei Medical University* in 1988 and obtained his Ph.D. from *University of Pennsylvania* in 1993. He is a gynecologic pathologist, trained and board-certified in anatomic pathology, having completed a clinical fellowship in gynecologic pathology followed by a cancer molecular genetics fellowship with Dr. Bert Vogelstein at Hopkins. Since 2000, Dr. Shih has become a faculty member and his research focuses on exploring genomic landscapes and pathogenesis of ovarian and endometrial cancers, developing new target-based therapy and applying innovative technology for early detection of gynecologic cancer. His research team has proposed the new model in classifying ovarian cancer which has become widely used nowadays, helped elucidating the origin of ovarian cancer and develops new technology to detect ovarian cancer. They have also pioneered in elucidating the molecular landscapes in different types of ovarian cancer and identify novel genes and pathways involved in chromatin remodeling, chromosomal instability, cytokinesis and tumor invasion in ovarian cancer. This knowledge together with implementation of the patient-derived xenograft model in mice paves the way for future development of precision cancer medicine. In collaboration with medical and gynecologic oncologists, the research team is initiating new clinical trials that capitalize their new molecular research findings. As an example, they are determining if adding a new kinase inhibitor in the paclitaxel regimen will sensitize chemotherapy in recurrent ovarian cancer. His research is supported by NIH/NCI, DoD and several private foundation awards. Dr. Shih has published more than 310 original articles in prestigious journals such as *New England Journal of Medicine*, *Cancer Cell*, *Journal of National Cancer Institute*, *PNAS*, *Science*, *Lancet Oncology*, *Nature* and *Nature Medicine*, etc. which have been cited for 30,000 times. He has been invited to give more than 110 lectures worldwide. Dr. Shih is also a devoted teacher who has helped career development of young scientists and physicians to pursue academic excellence. He sits on several advisory boards such as NCI Ovarian Task Force of Gynecologic Cancer Steering Committee and Ovarian Cancer Research Foundation, etc. and serves as an editorial board member in *Cancer Research*, *Journal of Pathology*, *American Journal of Pathology* and several others. Besides his clinical, research, and teaching obligations, he is also a passionate photographer (4).

1. <https://professorships.jhu.edu/professorship/richard-w-telinde-distinguished-professorship-in-gynecological-pathology/>
2. [www.hopkinsmedicine.org/gynecology\\_obstetrics/research/areas/telinde\\_lab.html](http://www.hopkinsmedicine.org/gynecology_obstetrics/research/areas/telinde_lab.html)

3. [www.gynecologycancer.org](http://www.gynecologycancer.org)
4. [www.shih-photography.com](http://www.shih-photography.com)

## DEMOGRAPHIC AND PERSONAL INFORMATION

### Current Appointments

**Richard W. TeLinde Distinguished Professor**, Department of Gynecology and Obstetrics with secondary appointment in the Departments of Oncology and Pathology, Johns Hopkins Medical Institutions

### Personal Data

Country of birth place: Dai-Chia Township, Tai-Chuan City, Taiwan

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## EDUCATION AND TRAINING

<u>Year</u>	<u>Degree</u>	<u>Institution</u>	<u>Discipline</u>
1981-1988	M.D.	Taipei Medical University	Medicine
1989- 1993	Ph.D.	University of Pennsylvania	Pathology
1993-1994	Postdoctoral Fellow	The Wistar Institute	Cancer Biology
1994-1997	Resident	Johns Hopkins Hospital	Pathology
1997-1998	Clinical Fellow	Johns Hopkins Hospital	Gynecologic Pathology
1998-2000	Research Fellow	Johns Hopkins Oncology Ctr. Cancer Genetics <u>(w/ Dr. Bert Vogelstein)</u>	

## PROFESSIONAL EXPERIENCE

2000-2001	<b>Instructor</b> , Department of Pathology Johns Hopkins Medical Institutions, Baltimore, MD
2001-2003	<b>Assistant Professor</b> , Department of Pathology Johns Hopkins Medical Institutions, Baltimore, MD
2003-2008	<b>Associate Professor</b> , Departments of Pathology, Oncology and Gynecology and Obstetrics Johns Hopkins Medical Institutions, Baltimore, MD
2008-	<b>Professor</b> , Departments of Pathology, Oncology and Gynecology/Obstetrics Johns Hopkins Medical Institutions, Baltimore, MD
2014-	<b>Richard W. TeLinde Distinguished Professor (endowed Chair)</b>

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**RESEARCH ACTIVITIES**

research website: [www.gynecologycancer.org](http://www.gynecologycancer.org)

**Peer-Reviewed Research Articles**

Dr. Shih's publications can be found in NCBI *My Bibliography* at:

<https://www.ncbi.nlm.nih.gov/myncbi/collections/bibliography/47955017/>

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2. Valyi-Nagy I, **Shih IM**, Gyorfi T, Greenstein D, Elder DE, Herlyn M. Spontaneous and induced differentiation of cultured human melanoma cells. *Int J Cancer*, 54:159-165, 1993. PMID: 8478142
3. Valyi-Nagy I, Hirka G, Jensen PJ, **Shih IM**, Juhasz I, Herlyn M. Undifferentiated keratinocytes control growth, morphology, and antigen expression of normal melanocytes through cell-cell contact. *Lab Invest*, 69:152-159, 1993. PMID: 8350597
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5. Mancianti ML, Gyorfi T, **Shih IM**, Valyi-Nagy I, Levengood G, Menssen HD, Halpern A, Elder DE, Herlyn M. Growth regulation of cultured human nevus cells. *J Invest Dermatol*, 100:281S-287S, 1993. PMID: 8440904
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7. **Shih IM**, Herlyn M. Autocrine and paracrine roles of growth factors in human melanoma. *In Vivo*, 8:113-124, 1994. PMID: 7519892
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### Book Chapters

1. **Shih IM**, Mazur MT, Kurman RJ. Chapter 49: Gestational trophoblastic disease. In Sternberg's Diagnostic Surgical Pathology. Edited by Stacey E. Mills. pp 2049-2070, Sixth edition. Lippincott Williams & Wilkins Publishers, New York, 2014.
2. **Shih IM**, Mazur MT, Kurman RJ. Chapter 20: Gestational trophoblastic disease. In Blaustein's Pathology of Female Genital Tract. Edited by Robert J. Kurman. Sixth edition. Springer-Verlag, New York, pp1075-1135, 2011.
3. **Shih IM**, Sokoll L, Chan DW. Tumor markers of ovarian cancer. In "Tumor markers-physiology, pathobiology and clinical applications" Edited by E.P. Diamandis et al. American Association for Clinical Chemistry Press. Washington DC, First edition, pp239-252, 2002.
4. Chang H-W, **Shih IM**. Digital Single-Nucleotide polymorphism analysis for allelic imbalance. In Methods in Molecular Medicine: Pancreatic Cancer (volume: 103). Edited by G. H. Su, Humana Press, Totowa, NJ, USA, pp 137-142, 2004.
5. Yen, JM, **Shih IM**, Velculescu VE, Wang TL. Amplification in DNA copy numbers as a mechanism of acquired drug resistance. In Cancer drug resistance. Edited by Teicher BA, Human press, Totowa, New Jersey. pp 531-540, 2006.
6. **Shih IM**, Kurman RJ. Ovarian serous carcinogenesis- a proposed model. In Molecular Pathology of Gynecological Cancer. Edited by Giordano A, Bovicelli A, and Kurman RJ, Humana press, Totowa, New Jersey. pp 17-28, 2006.

7. Shih IM, Kurman RJ. Pathogenesis of gestational trophoblastic lesions. In Molecular Pathology of Gynecological Cancer. Edited by Giordano A, Bovicelli A, and Kurman RJ, Humana press, Totowa, New Jersey. pp 157-166, 2006.
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9. Jinawath N, **Shih IM**. Biology and Pathology of Ovarian Cancer. In Early Diagnosis of Cancer Series: Ovarian Cancer. Edited by Bristow R. and Armstrong D. (series editor: Yang, SC). Elsevier, Amsterdam, Netherlands, pp17-32, 2009.
10. Guan B, Wang TL, **Shih IM**. Recent advances in cancer genomics and cancer-associated genes discovery. In: An Omics Perspective of Cancer. WCS Cho (ed.), p11-29, Springer-Verlag, New York, 2010.
11. **Shih IM**. Gestational trophoblastic lesions. In Gynecologic Pathology, a volume in the series of Foundations in Diagnostic Pathology. Edited by Nucci MR, Oliva E. (Series editor: Goldblum JR), pp645-655. Elsevier Churchill Linvingstone, 2009.
12. Park J, **Shih IM**, Wang TL. Targeting the Notch signaling pathway in cancer stem cells. In: Cancer Stem Cells. Edited by William Farrar. pp128-137, Cambridge University Press (CUUS668), 2009.
13. Sfakianos G P, Secord AA, **Shih IM**. Chapter 13: Epithelial ovarian cancers: low malignant potential and non-serous ovarian histologies. In: Gynecologic oncology: clinical practice and surgical atlas. pp 237-256. McGraw-Hill Professional, New York, NY, 2012.
14. Kurman RJ, Bagby C, **Shih IM**. Chapter 37: Molecular diagnostics of gynecologic neoplasms. In: Principles of Molecular Diagnostics and Personalized Cancer Therapy. Ed by Tan D. Lippincott Williams & Wilkins.
15. Chen L, Tian Y, Yu G, Miller DJ, **Shih IM**, and Wang Y. Discriminant and network analysis to study origin of cancer. In: Statistical Diagnostics of Cancer: Analyzing High Dimensional Genetics and Genomics Data. Edited by Frank Emmert-Streib and Matthias Dehmer, Wiley-Blackwell, 2012.
16. WHO classification of tumors of female reproductive organs. Ed by Kurman, Carcangiu, Herrington, Young. 4<sup>th</sup> edition, WHO (IARC) press, Lyon, France, 2014.
17. Yen TT, Fader AN, Gerry E, **Shih IM**. The molecular landscape of different ovarian cancer subtypes and new prospects. SM Group Open Access eBooks, Dover Delaware, 2016
18. Bergstrom J, **Shih IM**, Fader AN. Updates on rare epithelial ovarian carcinoma. In Translational Advances in Gynecologic Cancers. Ed by Birrer MJ and Ceppi L. Academic Press, Elsevier, 2017

## Others

1. **Shih IM.** Placental site trophoblastic tumor. In Encyclopedia of Cancer, 3rd edition, Springer-Verlag, Editor: Manfred Schwab, Berlin and Heidelberg, GmbH & Co, 2016.  
[http://www.springerreference.com/docs/featured/978-3-540-47648-1\\_5715.html](http://www.springerreference.com/docs/featured/978-3-540-47648-1_5715.html)
2. Chen L, Xuan J, Gu J, Wang Y, Zhang Z, Wang TL, **Shih IM.** Integrative network analysis to identify aberrant pathway networks in ovarian cancer. Pac Symp Biocomput, 31-42, 2012.
3. Kurman RJ, **Shih IM.** Ovarian cancer- silent and deadly. In Atlas of Science.  
<http://atlasofscience.org/ovarian-cancer-silent-and-deadly/#more-13913>

## Inventions, Patents, Copyrights

- US patent #6419896: Non-invasive approach for assessing tumor in living animals. Inventors: Vogelstein B, Kinzler WK and Shih I-M
- US patent #20110171741: DNA integrity assay (DIA) for cancer diagnostics, using confocal fluorescence spectroscopy. Inventors: Tza-Hui Wang, Kelvin J. Liu, Ie-Ming Shih
- US patent in process (11/604,183): Application of Rsf-1 expression to predict clinical outcome in cancer patients. Inventors: Shih I-M and Wang T-L
- International patent in progress (PCT/US2008/011948): Detection of cancer by measuring genomic DNA copy number and strand length in cell-free DNA. Inventors: Shih I-M

## Extramural Funding

### Current awarded Grants

04/01/17 - 03/30/22	Experimental Therapeutics by targeting Spleen Tyrosine Kinase RO1 CA215483 NCI/NIH Role: PI Purpose: The goal is to elucidate the molecular mechanism how SYK enhances paclitaxel resistance through modulating microtubule dynamics and identify the potential biomarker for outcome prediction
4/1/2016 – 3/31/2021	Early Detection Research Network (EDRN) UO1 CA200469 Development of in vitro diagnostic multivariate index assay using liquid-based cervical cytology specimen and/or serum/plasma

biomarkers for the detection of early stage or low-volume ovarian cancer

NCI/NIH

Role: Principal Investigator (multiple PIs: Shih & Zhang)

Purpose: To identify protein biomarkers and develop immunoassays for ovarian cancer detection in liquid-based cervical cytologic samples and blood.

1/1/2017-12/31/2020

Development of Targeted Therapies for Recurrent Ovarian Cancer

Collaborative Research Development Grant # 458972

Ovarian Cancer Research Foundation Alliance (OCRFA)

Role: PI

Purpose: Development of a research program which focuses on identifying and characterizing promising new anti-tumor molecules and develop/apply inhibitors for targeted therapy in ovarian cancer

10/01/2011 – 06/30/2018

Prevention of Ovarian High-Grade Serous Carcinoma by

Elucidating Its Early Changes, W81XWH-11-2-0230

OC100517 (Director: RJ Kurman; co-Director: I-M Shih)

Consortium Award, US Department of Defense (USAMRMC),

Directed Medical Research Programs (CDMRP)

Role: Co-director and co-investigator; 3.0 calendar months

Purpose: To determine the origin and pathogenesis in the development of ovarian high-grade serous carcinomas by employing cancer genetics, cell biology, animal models and epidemiologic studies through multi-institutional research effort. The consortium includes five research projects and three cores.

01/15/2017 – 01/14/2019

Development of early detection molecular platform for ovarian

cancer in high-risk women

Grant contract (PIs: I-M Shih and A Fader)

Gray Foundation

Role: co-PI

Purpose: This study focuses on applying sequencing technology to detect ovarian cancer associated mutations in liquid-based cytology specimens in women with increased risk of ovarian cancer.

01/03/2017 – 2/28/2018

Molecular study on endometriosis

Endometriosis Foundation of America

Role: PI

Purpose: Applying next-generation sequencing to elucidate the somatic mutations in deeply infiltrative endometriosis

### Recent Completed Research Grants

09/01/2011 - 08/30/2016	Proteome characterization center: a genoproteomics pipeline for cancer biomarker. Clinical Proteomic Technologies for Cancer Initiative. U24CA160036 (PI: D Chan) NCI/NIH Role: co-investigator; 1.0 calendar months Purpose: To identify, verify and characterize biomarkers for ovarian cancer by combining genomics and proteomic approaches. To establish the clinical proteomic technology center and to validate, verify and characterized of ovarian cancer biomarkers using genoproteomic approaches.
4/1/2011 – 3/31/2017	Notch3 signaling in ovarian cancer RO1 CA148826 (PI: TL Wang) NCI/NIH Role: co-investigator; 0.5 calendar months Purpose: To investigate the molecular mechanism of Notch3 signaling in the pathogenesis of ovarian high-grade serous carcinoma.
12/01/2004 - 11/30/2012	Molecular Diagnostics for Malignant Effusion 2R01 CA103937 (PI: I-M Shih) NCI/NIH Role: principal investigator; 1.0 calendar months Purpose: To study the functional role of NAC-1 in the development of ovarian carcinoma.
4/01/2008 - 1/31/2013	The Roles of HBXAP Gene in Ovarian Cancer 1R01 CA129080 (PI: I-M Shih) NCI/NIH Role: principal investigator; 1.0 calendar months Purpose: To study the molecular mechanism of HBXAP gene product in the progression of ovarian carcinoma.
07/01/2011 - 06/30/2016	Multiplexed Detection of Cell Free DNA Biomarkers for Cancer RO1 CA155305 (PI: TZ Wang) NCI/NIH Role: co-investigator; 1.0 calendar months Purpose: To analyze the potential application of multiplexed detection of cell free DNA as biomarkers for cancer detection.
04/01/2007 - 01/31/2012	Pathogenesis of Ovarian Serous Borderline Tumors RO1 CA116184 (PI: R.J. Kurman) NCI/NIH Role: co-Director, project 1 leader; 0.5 calendar months Purpose: To study the molecular genetic profiles of implants that is associated with ovarian serous borderline tumors. To develop biomarkers to better diagnose the implant and correlate the molecular genetic profiles and biomarker expression with clinical behavior in patients.

07/01/2002- 06/30/2007	Development of a New Technology in Analyzing Allelic Imbalance in Plasma DNA as a Tool for Early Cancer Detection R21/R33 CA97527 (PI: Shih) NCI/NIH Role: principal investigator; 4.0 calendar months Purpose: To develop an innovative molecular method to better diagnose human cancer using cell-free circulating DNA in patients.
09/30/2014-09/29/2016	Targeting the Mevalonate Pathway to Reduce Mortality from Ovarian Cancer DoD W81XWH-14-10021 DoD, OCRP Role: co-investigator Purpose: To determine if targeting the mevalonate pathway in ovarian cancer has biological and pre-clinical utility in delaying tumor progression in ovarian high-grade serous carcinoma. Several cell biology and molecular biologic approaches together with animal ovarian tumor models will be applied.
07/01/2008 - 06/30/2012	Notch3 Signaling Pathway in the Ovarian Carcinoma GMC-113937 (PI: TL Wang) American Cancer Society Role: co-investigator; 1.0 calendar month Purpose: This project is to characterize the role of Notch3 signaling pathway in ovarian tumorigenesis and identify Notch3 down-stream target genes in ovarian cancer.
06/01/2009 – 05/31/2012	High-throughput intracellular microrheology: a new tool for cancer research 1R21CA137686 (PI: D Wirtz/IM Shih) NCI/NIH Role: Co-PI Purpose: To apply a high-throughput intracellular microrheology in studying ovarian cancer
12/01/2011 - 11/30/2014	Tumor suppressor role of ARID1A R21 CA165807 (PI: IM Shih) NCI/NIH Role: principal investigator; 1.0 calendar months Purpose: To determine the tumor suppressor roles of ARID1A and its molecular mechanisms in developing gynecological cancer.
07/01/2002- 06/30/2006	Diverse Pathways in the Development of Ovarian Serous Tumors OC010017 (PI: RJ Kurman) US Department of Defense (USAMRMC), Directed Medical Research Programs (CDMRP) Role: Project #1 leader; 3.0 calendar months Purpose: To study the molecular pathways that is involved in the development of different types of ovarian serous carcinoma by using several new technologies including SAGE.

09/01/2003- 08/30/2004	Molecular genetic changes in the development of cervical cancer P50CA098252- SPORE (PI: TC Wu) NIH/NCI Role: co-investigator; 1.0 calendar month Purpose: The development project/pilot study in this SPORE of cervical cancer is to investigate the DNA copy number changes involved in the development of cervical cancer.
12/28/2005- 12/27/2006	Marker Discovery for Ovarian Cancer Research agreement Developmental Center of Biotechnology, Taiwan (PI: Shih) Role: principal investigator; 1.0 calendar month Purpose: To identify biomarkers for potential use in ovarian cancer diagnosis and therapy.
10/01/2006 - 09/30/2007	Characterization of Rsf-1 in human cancer China Medical University, Taiwan Research agreement (PI: Shih) Role: principal investigator; no salary requested Purpose: To study the molecular etiology of Rsf-1 expression in oral cancer in Taiwanese patients.
1/1/2008 - 12/31/2009	Notch3 signaling in the pathogenesis of ovarian cancer Ovarian Cancer Research Foundation (OCRF, New York) Individual Investigator Award (PI: T.L. Wang) Role: co-investigator; 0.6 calendar month Purpose: To characterize the Notch3 signaling pathway in the tumor progression of ovarian cancer. Specifically, the proposal is to determine how the Notch3 pathway goes awry in normal ovaries and the molecular mechanisms in which Notch3 pathway aberration contributes to ovarian cancer.
01/01/2009 – 12/31/2010	Screening of Chinese herbal medicine extracts in cancer therapy Research Agreement (PI: IM Shih) China Medical University, Taichung city, Taiwan Role: Principal; investigator Purpose: To screen candidate Chinese herbal extracts to inhibit specific cancer-associated targets for potential molecularly targeted therapy.
12/11/2006 - 12/31/2007	Molecular Markers for Clinical Outcome Prediction Oncotech, Inc. Research Agreement (PI: Shih) Role: principal investigator; 0.60 calendar month Purpose: To assess the clinical potential of Rsf-1 and

	NAC-1 immunohistochemistry in predicting clinical outcome in ovarian cancer patients.
04/01/2008 - 03/31/2010	Nanobiosensing Method for Point Mutation Detection of Cancer 1R21CA120742 (PI: TZ Wang) NCI/NIH Role: co-investigator; 0.60 calendar month Purpose: To develop a nanobiosensing technical platform to detect point sequence mutation of Kras and Braf genes using a relatively small amount of DNA samples without PCR.
07/01/2007 - 06/31/2009	Characterization of Chromatin Remodeling Gene, Rsf-1, in Pathogenesis of Ovarian Cancer Johns Hopkins-Weizmann Inst. (PI: Shih) Role: principal investigator; 0.60 calendar month Purpose: To study the biological function of Rsf-1 gene in the development of ovarian cancer.
01/01/2005 -12/31/2008	Identification and Characterization of Genomic Amplifications in Ovarian Serous Carcinoma OC04-0060 (PI: T.L. Wang) US Department of Defense (USAMRMC), Directed Medical Research Programs (CDMRP), New Investigator Research award Role: co-investigator; 1.0 calendar month Purpose: To identify and characterize ovarian cancer genome using digital karyotyping and SNP array.
07/01/2009 – 06/30/2011	Elucidation of molecular alterations in precursor lesions of ovarian serous carcinoma OC080469 (Director: RJ Kurman; Co-director: IM Shih) Role: Co-director Purpose: To establish ovarian cancer research consortiums to facilitate identify and characterize early lesions of ovarian cancer through multiple institution collaborations

## **EDUCATIONAL ACTIVITIES**

### **Classroom Instruction (Johns Hopkins University School of Medicine)**

- Gynecological Pathology and laboratory/small group, Pathology course for medical students, 1994-
- Graduate course in Pathobiology and Disease Mechanisms, Section of Ovarian Tumors, 2002-
- Graduate course in Functional Anatomy ("Female Reproductive Organ"), for graduate students, Johns Hopkins University, 2006-
- Graduate course in Pathobiology ("Gynecological Pathology") for graduate students, Johns Hopkins University, 2005-

### **Clinical Instruction (the Johns Hopkins Hospital)**

- Microscopic and gross teachings for medical students, residents and fellows rotating to gynecologic pathology, 1999-
- Didactic course on Gynecologic Pathology for residents and fellows, 2002-

### CME course speaker

- "Molecular pathways of ovarian cancer". At the Current Concepts in the Multidisciplinary Management of Ovarian Cancer, the Sidney Kimmel Cancer Center and the office of Continuing Medical Education, Johns Hopkins University, Baltimore, September, 2004.
- "Molecular genetics and target-based therapy for low-grade serous cancers of the ovary". At the Current Concepts in the Multidisciplinary Management of Ovarian Cancer, the office of Continuing Medical Education, Johns Hopkins University, Baltimore, September, 2005.
- "Gynecologic neoplasms- trophoblastic tumors and ovarian epithelial neoplasms". Symposium of the Taiwanese Association of Pathology, August 2006.
- "Update in gestational trophoblastic disease". Surgical Pathology Update, Leipzig, Germany, June, 2007.

### Mentoring

#### Research Fellows

- 2000-2002, Hsueh-Wei Chang, PhD, currently Chairman and Professor of the Department of Biological Science and Environmental Biology, Kaohsiung Medical University, Taiwan
- 2001-2003, Gad Singer, M.D., Professor at the Institute of Pathology, Baden, Switzerland
- 2002-2004, Brant G. Wang, MD, PhD, research fellow; currently an attending pathologist at the Washington Medical Center, Washington DC
- 2003-2004, Gudrun Pohl, MD, assistant professor at the University of Vienna, Austria
- 2003-2004, Chung-Liang Ho, MD, PhD, Associate Professor, National Chenug-Kung University School of Medicine, Tainan, Taiwan
- 2003, Ariane Aigelsreiter, MD, visiting research fellow, Austria
- 2003-2004, Reiko Dehari, MD, Visiting research fellow, Japan
- 2003-2004, Chih-Yi Hsu, MD, Visiting research fellow, currently a faculty t the National Yang-Ming University School of Medicine/VGH -Taipei, Taiwan
- 2004-2005, Tsung-Hsuan Lai, MD, Director of Reproductive Endocrinology and Infertility division, Department of Ob and Gyn, Taipei Cathay General Hospital, Taipei, Taiwan
- 2004-2006, Kentaro Nakayama, MD, PhD, Associate Professor, Shimane National University School of Medicine, Japan
- 2005-2007, Jim Sheu, PhD, Professor at the Institute of Biomedical Sciences, National Sun Yat-Sen University, Taiwan
- 2005-2006, Ritu Salani, MD, Assistant Professor and attending physician at the Ohio State University Health System, division of Gynecologic Oncology
- 2007 – current (visiting scholar), Ayse Ayhan, MD, PhD, attending/consulting pathologist at the Seirei Mikatahara General Hospital, Hamamatsu, Japan
- 2005-2007, Tsui-Lien Mao, MD, research fellow, currently an assistant professor at the National Taiwan University College of Medicine, Taipei, Taiwan
- 2007, Artit Jinawath, MD, PhD, research fellow/visiting resident, Thailand

- 2006-2008, Natini, Jinawath, MD, PhD, research fellow, currently a medical cytogenetics fellow at the Johns Hopkins Hospital
- 2006-2008, Jung Hye Choi, PhD, Assistant Professor at Kyung Hee University, Seoul, South Korea
- 2006-2008, Kuan-Ting Kuo, MD, Assistant Professor at the National Taiwan University Hospital, Taipei, Taiwan
- 2007-2008, Stefanie Ueda, MD, Assistant Professor, Department of Obstetrics and Gynecology, University of California at San Francisco, CA
- 2008-2010, Michelle Thiaville, PhD, Assistant Professor, Department of Biological Science, Nicholls State University, Louisiana
- 2008-2010, Pradeep K. Panuganti, MD, currently a resident in Texas Tech University of Health Sciences
- 2010, Daichi Maeda, MD, PhD, Assistant Professor, Department of Pathology, University of Tokyo, Japan
- 2010-2012, Stephanie Gaillard, Assistant Professor, Duke University
- 2009-2012, Alex Stoeck, PhD, Research Scientist Leader, Merck Co.
- 2011-2012, Chen-Hsuan Wu, MD, Instructor, Kaohsiung Chang Gung Memorial Hospital, and Chang Gung University College of Medicine, Kaohsiung, Taiwan
- 2012-2013, Laura Ardighieri, MD, a fellow at the Anatomia Patologica Spedali Civili Brescia, Italy
- 2009-2013, Elisabetta Kuhn, MD, staff scientist, International Agency for Research on Cancer (IARC), Lyon, France
- 2007-2013, Bin Guan, PhD, NIDDK, NIH
- 2012-2014, Tae Mogami, MD, PhD, Department of Gynecology, Yokohoma City University Medical Center, Japan
- 2013-2017, Yu Yu, PhD, Assistant Professor, University of Perth, Australia

**Graduate and Undergraduate Students (Johns Hopkins University except Ms. Mahle)**

- 2011-2015, Ren-Chin Wu, pathobiology graduate student (thesis student), currently an Assistant Professor at the Chang-Gang University School of Medicine, Taiwan.
- 2008-2012, KaiLee Yap, pathobiology graduate student (thesis student), currently a postdoc fellow at the University of Chicago.
- 2010-2012, Min Gao, exchange/visiting graduate student from Shandong University/Zilu hospital, China.
- 2008-2010, Chen Xu, exchange/visiting graduate student from China Scholarship Council, currently attending physician in the Department of Urology, the first affiliated hospital, Sun Yat Sen University, China
- 2005-2009, Joon Park, pathobiology graduate student (thesis student), currently a Senior Scientist, Samsung Advanced Institution for Technology, Seoul, South Korea.
- 2009-2010, Elizabeth Chen, currently medical student in Uniformed Services University of Health Sciences, Bethesda, Maryland.
- 2007-2008, Vivek Murthy, currently a medical student at NYU.
- 2003-2005, Robert J. Oldt III, currently a medical student at UMDNJ, NY.
- 2005, Jim M. Yen, MD, currently a medical resident at the Medical Center of the University of South California, CA.
- 2005, Eric Cheng, currently a medical student at UMDNJ, NY.
- 2005, Ilenna Neuberger, currently a medical student at UMDNJ, NY.

- 2007, Rebecca Bush, currently a medical student in Washington University School of Medicine, MO.
- 2007, David Chu, currently a medical student in University of Pittsburgh, PA.
- 2007, Mandy Mahle, Queens University of Charlotte, NC, currently, a Gynecology Resident at the Johns Hopkins Hospital
- 2007-2009, Kevin Lee, currently a medical student in Albany Medical College, NY.
- 2007-2009, Paul Markowski, previously lab assistant, currently a medical student in Robert Wood Johnson Medical School, NJ.
- Marilina Mascaró, visiting PhD student, Facultad de Farmacia Bioquímica, Catedra de Immunología, Buenos Aires, Argentina
- 2010-2015, Ren-Chin Wu, PhD student, Pathobiology Graduate Program, Johns Hopkins University, Assistant Professor, Chang-Gung University, Taiwan
- Pending updates...

**Ph.D. Student Qualification Committee:**

- MD/PhD candidates in Cellular & Molecular Medicine Graduate Program:  
Saurabh Saha, Harith Rajagopalan, Chetan Bettego, Jordan Cummins
- PhD candidates in Cellular & Molecular Medicine Graduate Program:  
Ian Cheong, Carlo Rago and Jihye Yun
- Pharmacology Graduate Program:  
Xin Huang, Meng Li, Kibem Kim
- Pathobiology Graduate Program:  
Yin Yeh, Shaaretha Pelly, Sophie Lin Zhirong; Kah Suan Lim; Byung-Hak Kang, Shu-Han Yu
- Graduate Board Exam, Department of Chemical and Molecular Engineering, Johns Hopkins University:  
Serving as the Chair of the Exam committee for Melissa Thompson, CK Wang.

**Ph.D. Student Thesis Committee:**

- Melissa Thompson, PhD candidate, Department of Chemical and Molecular Engineering, Johns Hopkins University (Homewood campus), 2007- current
- Melissa Landek, PhD candidate, Pathobiology Graduate Program, Johns Hopkins Medical Institutions, 2008
- Hsin Chih Yeh, PhD candidate, Department of Bioengineering, Johns Hopkins University, 2008
- Christopher Puleo, PhD candidate, Department of Bioengineering, Johns Hopkins University, 2009
- Vasudev Bailey, PhD candidate, Department of Bioengineering, Johns Hopkins University, 2010
- Kelvin Liu, PhD candidate, Department of Bioengineering, Johns Hopkins University, 2011
- Yi Zhang, PhD candidate, Department of Bioengineering, Johns Hopkins University, 2013
- Chong-Guiy Wang, PhD candidate, Department of Health Policy, School of Public Health and Hygiene, 2015
- Young Yang, PhD candidate, Department of Health Policy, School of Public Health and Hygiene, 2018

- Kelly Kyker-Snowman, PhD candidate, Cell and Molecular Medicine Graduate Program, Johns Hopkins University, 2018

**Participation in mentoring Gynecologic Pathology Fellows (*Johns Hopkins Hospital*):**

- 2003 – 2005, Monica Srodon, M.D.  
Staff pathologist  
Greensboro Pathology Associates  
Greensboro, NC
- 2004 – 2006, Saeid Movahedi-Lankarani, M.D.  
Staff pathologist  
Hospital Pathology Associates  
St. Paul, MN
- 2006 – 2007, Dengfeng Cao, M.D., Ph.D.  
Assistant Professor  
Department of Pathology & Immunology  
Washington University School of Medicine  
St. Louis, MO
- 2006 – 2007, Kara Judson, M.D.  
Attending pathologist  
Lenox Hill Hospital  
New York, NY
- 2005 – Current, Anna Yemelyanova, M.D.  
(Current Fellow)
- 2007 – Current, Thomas McConnell, M.D.  
(Current Fellow)
- 2007 – 2008, Emanuela Veras, M.D.  
Memorial Sloan-Kettering Cancer Center

**Awards Received by Dr. Shih's Trainees**

- **JHU Pathology Young Investigator Day Research Award**, 2017, Yohan Suryo Rahmanto, PhD, research fellow
- **JHU Pathology Young Investigator Day Research Award**, 2017, Youngran Park, graduate student
- **1<sup>st</sup> place for basic science research for undergraduates**, 2016, University of Maryland at Baltimore County Dominique Munson, undergraduate student
- **Young Investigator Award in Basic Science, Department of Pathology, JHU**, 2016, Youngran Park, graduate student
- **HERA Research Award**, 2015, Yohan Suryo Rahmanto, PhD, research fellow
- **Collen's Dream Foundation for ovarian cancer research award**, 2014, Hiroyasu Kashima, MD, research fellow
- **Keio University School of Medicine Young Investigator Award, Japan**, 2014, Yusuke Kobayashi, research fellow
- **Young Investigator Award in Basic Science, Department of Pathology, JHU**, 2014, Fun Yuyu, postdoctoral fellow
- **Ovarian Cancer Research Foundation (OCRF) award**, 2013, Fun Yuyu, postdoctoral fellow

- **Oppo's Foundation for Ovarian Cancer Young Investigator Award**, 2013, Felix Zeppernick, research fellow
- **Scholar-in-Training Award, American Association for Cancer Research**, 2013, Ren-Chin Wu, graduate student
- **HERA Research Award**, 2013, Fnu Yuyu, PhD, research fellow
- **Collen's Dream Foundation for ovarian cancer research award**, 2013, Felix Zeppernick, MD, research fellow
- **YW Loke Award**, 2012, Yusuke Kobayashi, MD, PhD, research fellow, award from International Federation of Placenta Associations
- **HERA Research Award**, 2012, Elizabeth Kuhn, MD, research fellow
- **Scholar-in-Training Award, American Association for Cancer Research**, 2011, Kai-Lee Yap, graduate student
- **Ovarian Cancer Research Foundation (OCRF) Award**, 2011, Bin Guan, PhD, postdoctoral fellow
- **American Society of Clinical Oncology Young Investigator Research Grant**, 2011, Stephanie Gaillard, MD, PhD, research fellow
- **Scholar-in-Training Award by Aflac, Inc.**, 2011, Kai-Lee Yap, PhD graduate student
- **HERA Research Award**, 2011, Alex Stoeck, PhD, research fellow
- **Pathology Young Investigator Award**, 2011, Kai-Lee Yap, PhD graduate student
- **Pathology Young Investigator Award**, 2011, Elisabetta Kuhn, MD research fellow
- **Pathology Young Investigator Award**, 2011, Alex Stoeck, PhD research fellow
- **International Society of Gynecologic Pathology Fellowship Award**, 2011, Laura Ardigheri, research fellow, 2011
- **HERA Research Award**, 2010, Bin Guan, PhD, research fellow
- **UICC, ICRETT award**. 2010, Marilina Mascaró, visiting PhD student, Argentina
- **Pathology Young Investigator Award**, 2010, Kai-Lee Yap, PhD graduate student
- **HERA Research Award**, 2008, Stefanie Ueda, MD, research fellow
- **Pathology Department Young Investigator First Price Award in Basic Science**, 2008, Joon Park, Johns Hopkins Medical Institutions
- **HERA Research Award**, 2007, Natini Jinawath, MD, PhD, research fellow
- **Provost's undergraduate research award**, 2007, Chanont Vasooontara, Johns Hopkins University
- **Ovarian Cancer Research Fund (OCRF)**, 2006, Ritu Salani, MD, research fellow
- **Best Abstract Award**, 2006, Ritu Salani, MD, research fellow, International Gynecologic Cancer Society biannual meeting, Santa Monica
- **Provost's undergraduate research award**, 2006, Rebecca Busch, JHU undergraduate student
- **HERA Research Award**, 2005, Kentaro Nakayama, MD, PhD, research fellow
- **First Place Award for Research Fellow in Basic Research, Johns Hopkins Oncology**, 2005, Jim Sheu, PhD, research fellow
- **International Union Against Cancer Technology Transfer Fellowship**, 2004, Gudrum Pohl, MD, research fellow
- **HERA Research Award**, 2003, Brant Wang, MD, PhD, research fellow
- **Yong Investigator Award of the International Society of Gynecologic Pathologists**, 2004, Gad Singer, MD, research fellow
- **Howard Hughes Undergraduate Research Award**, 2003, Robert J. Oldt III, JHU undergraduate student
- **Provost's undergraduate research award**, 2002, Robert J. Oldt III, JHU undergraduate student

## **CLINICAL ACTIVITIES**

### **Certification**

- The American Board of Pathology --- Anatomic Pathology, 1997
- Medical Licensure: Maryland, 1997

### **Clinical Service Responsibilities (20% of total effort) at the Johns Hopkins Hospital**

- **Attending Physician**- diagnostic pathology in routine gynecologic specimens
- **Consultant Pathologist**- gynecologic pathology, specifically gestational trophoblastic diseases (nationally and internationally)

## **ADMINISTRATIVE AND ORGANIZATIONAL ACTIVITIES**

### **Administrative Appointments**

- Co-director, the Breast and Ovarian Cancer Program, Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins Medical Institutions, 2014- current. Mainly involved in program development, research planning and educational activities.
- Planning Committee, the 7<sup>th</sup> Biennial Meeting of Asia-Pacific International Academy of Pathology, 2009-2011
- Johns Hopkins Oncology Center Tissue Core oversight committee, 2013-
- Johns Hopkins Professor Promotion Committee, 2013-
- Symposium organizer, Johns Hopkins Annual Ovarian Cancer Symposium, 2009-current.
- President of International Association of Chinese Pathologists, 2006-2007; received the *Excellent Service Award*, March 2, 2008
- President of North American Taiwanese Medical Association-Baltimore chapter, 2006-2008
- Faculty promotion committee, Department of Pathology, Johns Hopkins Medical Institutions, 2004
- PhD student qualification/thesis committees, 2002-current
- Pathology residency advisory committee, 2009-current

### **Editorial Board Appointments**

- The American Journal of Pathology (2016-2019)
- Editor-in-Chief, Current Obstetrics and Gynecology Report (2012-2015)
- Cancer Research (2013-2015)
- The Journal of Pathology (2012-)
- Guest Editor, Journal of Oncology special issue in ovarian cancer targeted therapy, 2011
- International Journal of Gynecologic Pathology
- ISRN Pathology
- International Journal of Molecular Sciences (Molecular Pathology section)
- Journal of the Formosan Medical Association
- Frontiers in Women's Cancer

### **Journal Peer Review Activities**

- Proceedings of National Academy of Science
- Cancer Research
- Clinical Cancer Research
- Oncogene
- Journal of Clinical Investigation
- Journal of Biological Chemistry
- International Journal of Cancer
- Gynecologic Oncology
- Cancer Letters
- Modern Pathology
- Placenta
- The American Journal of Pathology
- Laboratory Investigation
- Human Pathology
- The Journal of Obstetrics and Gynecology Research
- British Journal of Cancer
- International Journal of Gynecologic Pathology
- Gastroenterology
- Annals of Oncology
- American Journal of Obstetrics and Gynecology
- International Journal of Gynecologic Cancer

#### **Professional Societies Membership**

- American Association for Cancer Research, 2004-present
- American Society for Investigative Pathology, 2002-present
- International Association of Gynecologic Pathologists, 1998-present
- United States and Canadian Academy of Pathology, 1998-present
- International Society for the Study of Trophoblastic Disease, 2000-present
- Society for the Study of Reproduction, 2000-present
- American Medical Association, 1998
- International Federation of Placental Associations, 1996-present

#### **Panelist in Study Sections and Grant Review Committees**

- National Institute of Health, National Cancer Institute, member of Omnibus- Cancer Biology 1 study section, 2013
- National Institute of Health, National Cancer Institute, member of P50 SPORE study section, 2012-
- National Institute of Health, National Cancer Institute, , Ad Hoc member of Provocative Question study section, 2012
- National Institute of Health, National Cancer Institute, member of Cancer Molecular Pathobiology Study section (CAMP), 2006-2011 (\*Recipient of "Brain Award" and "Humanitarian Award")
- National Institute of Health, National Cancer Institute, Ad Hoc member of R15 Academic Research Enhancement Award Study Section, 2011.
- National Institute of Health, National Cancer Institute, site visit adviser, EDRN Early Detection Network, Cancer Biomarkers Research Group, July 15, 2008

- National Institute of Health, National Cancer Institute, member of ZRG1 Onc-L (12)B Cancer Diagnostic & Treatment Study Section, March 2005, October 2005, March 2006, June 2006, February 2007 (member)
- The Wellcome Trust, London, United Kingdom, Research proposal reviewer, 1998 (Ad Hoc)
- National Institute of Health, National Cancer Institute, study section of IMAT, R21: "new innovative technology in cancer", 2002 (Ad Hoc)
- Israel Science Foundation (ISF), Research proposal reviewer, 2004 (Ad Hoc)
- US Department of Defense (USAMRMC/CDMRP) ovarian cancer research program, member of the review committee, April, 2005 (Ad Hoc)
- Cancer Research UK, April 2005, July 2008 (Ad Hoc)
- Netherlands Organization for Health Research and Development (ZonMw), Netherland, grant proposal reviewer for 80-007029-98-07041, March 2006 (Ad Hoc)
- Research Grants Council of Hong Kong, panel member and external reviewer, March 2006, December 2007
- US Department of Defense ovarian cancer research program-concept awards, member of the review committee, April, 2006 (Ad Hoc)
- Cancer Research UK, requested by the Translational Research in Clinical Trials Committee, July 2006 (Ad Hoc)
- U.S. Civilian Research Development Foundation, Arlington, Virginia, October 2006 (Ad Hoc)
- Swiss National Science Foundation, Berne, Switzerland, January, 2007 (Ad Hoc)
- Kansas Masonic Foundation, Kansas Masonic Cancer Research Institute, 2007 (Ad Hoc)
- Invited reviewer requested by the Ministry of Science & Technology, Life Sciences Division, Israel, for Taiwanese Israeli scientific and technological cooperation, 2007
- Invited reviewer requested by the Sheffield Hospital Charitable Trust Medical Research Committee, UK, 2008
- Maryland Industrial Partnerships (MIPS) Program, University of Maryland College Park, 2008
- US Department of Defense (USAMRMC/CDMRP) ovarian cancer research program, member of the review committee, April, 2009 (Ad Hoc)
- American Institute of Biological Sciences (AIBS), May, 2010 (Ad Hoc)
- Calgary Laboratory Services Health Services Research Funding Competition, June, 2010 (Ad Hoc)
- National Medical Research Council, Singapore, January 2011.

#### **Organizer, chair and moderator in conference organizations**

- *Chair Moderator*, Poster Section In 4th Conference of the International Federation of Placenta Associations. Tokyo, Japan, 1998.
- *Symposium section chair*, Gestational trophoblastic disease. In XXVI International Congress of the International Academy of Pathology, Montreal, Canada, September 2006.
- *Moderator*, Pathobiology platform section, annual (the 97<sup>th</sup>) meeting of the United States and Canadian Academy of Pathology (USCAP), Denver, Colorado, March 2008.
- *Symposium organizer*, Ovarian Cancer Symposium- Elucidating Early Ovarian Carcinogenesis: Implications for Early Detection and Treatment. Sponsored by Department of Defense. Baltimore, Maryland, May 28-29, 2009.

- *Moderator*, Gynecologic Pathology platform section, annual (the 99<sup>th</sup>) meeting of the United States and Canadian Academy of Pathology (USCAP), Washington DC, March 2010.
- *Moderator*, Gynecologic Pathology platform section, annual (the 100<sup>th</sup>) meeting of the United States and Canadian Academy of Pathology (USCAP), San Antonio, TX, March 2011.
- *Section convener*, gynecologic pathology section, in the (scheduled) 7th Asia-Pacific International Academy of Pathology, Taipei, Taiwan, May 20-24, 2011.
- Chair of the Plenary Session 5: Prevention and Early Detection. In AACR Special Conference: Addressing critical questions in ovarian cancer research and treatment. Pittsburgh, Pennsylvania, October 3, 2017.

#### **Advisory boards, committees and consultation groups**

- **Scientific Advisory Committee**, Ovarian Cancer Research Foundation (OCRF), New York, 2013-
- **Oncology Tumor Specimen Core Oversight Committee**, Johns Hopkins Sidney Kimmel Cancer Center, 2013-
- **NCI Ovarian Task Force of Gynecologic Cancer Steering Committee**, 2012-2015
- **International Society of Gynecologic Pathology/World Health Organization (WHO) Nomenclature Committee for gynecological neoplasm**, 2012
- **External advisory board**, Ovarian Cancer SPORE at Fox Chase Cancer Center, 2013
- **International Society of Gynecologic Pathology Nomenclature Committee**: Gestational trophoblastic disease subcommittee, 2011-
- **Panelist** of an NIH sponsored consensus meeting for ovarian borderline tumor, Bethesda, 2003
- **Committee member** in the *National Academy for Clinical Biochemistry*-ovarian cancer marker Laboratory Medicine Practice Guidelines (tumor markers). 2003

#### **Ad Hoc member in Award/Fellowship Committee**

- Wittgenstein Award, funded by the Austrian Science Fund (FWF), 2007
- Moldovan Young Scientist Scholarship Program, United States Civilian Research & Development Foundation, 2007

## **RECOGNITION**

#### **Awards and Honors**

- *The Best Intern Award*, McKay Memorial Hospital, Taiwan, 1988
- *TeLinde Research Award*, Division of Gynecologic Pathology, Department of Pathology, the Johns Hopkins Hospital, 1996-1998
- *Young Investigator Award*, The 13th Rochester Trophoblast Conference, Banff, Canada, 1996
- *Junior Achievement Award*, NIH/FDA Chinese American Association and Washington DC Chapter of Society of Chinese Bioscientists in America, 1998
- *Young Investigator Award*, International Society of Gynecological Pathologists, 2000.
- *Clinician Scientist Award*, Johns Hopkins University School of Medicine, 2002.

- *Election to hold the Endowed Chair position as the 2<sup>nd</sup> Richard W. TeLinde Distinguished Professor, Johns Hopkins University School of Medicine, 2014.*
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### **Invited Talks and Panels**

- *Invited Speaker, "Pathology of benign and malignant lesions of intermediate trophoblast". In 4<sup>th</sup> Conference of the International Federation of Placental Associations. Tokyo, Japan, 1998.*
- *Invited Speaker "Molecular surrogates of tumor progression in body fluids". Bowling Green State University, Ohio, 2001.*
- *Invited Speaker, "Molecular Landscape of Ovarian cancer and its implication for early diagnosis". Chang-Gung Memorial Hospital, Taiwan, 2002.*
- *Invited Speaker, "Gestational trophoblastic diseases", Taipei Medical University, Taiwan, 2002.*
- *Invited Speaker, "Molecular Landscape of Ovarian cancer". National Cancer Institute/NIH, 2002.*
- *Invited Lecturer, "Gestational trophoblastic diseases", Pathology Laboratory, National Cancer Institute/NIH, 2002.*
- *Invited Speaker, "Circulating tumor-released DNA as the marker for early detection of cancer". Pathology Grand Round, MD Anderson Cancer Center, January 2003.*
- *Invited Lecturer, "Pathology of gestational trophoblastic diseases", MD Anderson Cancer Center, January 2003.*
- *Invited Speaker, "Digital PCR and clinical applications". At the 11<sup>th</sup> annual meeting of "Nucleic acid-based technologies" Baltimore, June 2003.*
- *Invited Speaker, "New technologies in exploring disorders of human implantation and trophoblast". Perinatology research branch, NICHD, Detroit, May, 2003.*
- *Invited Speaker, "Pathology of intermediate trophoblastic lesions". NICHD, Detroit, May, 2003.*
- *Invited Speaker, "Allelic imbalance in detecting ovarian and other types of cancer". At the 4<sup>th</sup> Principal Investigator Meeting of "Innovative Molecular Analysis Technologies (IMAT) Program" sponsored by NIH. San Diego, June 2003.*
- *Invited Speaker, "Molecular Genetic Markers for Cancer Detection in Blood". At the Cambridge Healthtech Institute's 11<sup>th</sup> Annual Molecular Medicine Tri-Conference, San Francisco, March 2004.*
- *Invited Speaker, "Molecular pathways of ovarian cancer-translational cancer research by analyzing cancer genome". Division of epidemiology and genetics, NCI/NIH, Rockville, Maryland, September 16, 2004.*
- *Invited Speaker, "DNA preparation for cancer genomic study-the pathologist's views". Lecture in the G.O.T. (Getting Optimal Targets) summit series, Genomic and Proteomic Sample Preparation, Boston, May 3-4, 2005.*
- *Invited Speaker, "Identification of novel genes for cancer therapy and diagnosis by exploring cancer genome". 10th Annual Meeting of Chinese Biopharmaceutical Association, Rockville, Maryland, June 18, 2005.*
- *Guest Speaker, "Exploring ovarian cancer genome- new insights and old challenges". Fox Chase Cancer Center, Philadelphia, Pennsylvania, August 9, 2005.*
- *Invited Speaker, "Relationship of serous borderline tumor and carcinoma". The annual companion meeting of the International Association for Gynecologic Pathologists. Atlanta, Georgia, Feb. 12, 2006.*

- *Invited Speaker*, "Identification of novel molecular targets for ovarian cancer therapy". University of Oslo. Oslo, Norway, Feb. 27, 2006.
- *Invited Speaker*, "Translating Ovarian Cancer Genome- New Genes for Prognostic Prediction and Targeted Therapy". Pathology Grand Round, University of British Columbia, Vancouver, Canada, March 13, 2006.
- *Invited Speaker*, "Trophoblastic tumors and tumor-like lesions". Department of Pathology, Vancouver Hospital, Canada, March 13, 2006.
- *Invited Speaker*, "*Gestational trophoblastic tumor-an intellectual Odyssey*". Second Investigative Pathology Conference, Cleveland Clinics, Cleveland, Ohio, June 3, 2006
- *Invited Speaker*, "Applications of HLA-G expression in the diagnosis of human neoplastic diseases". Forth International conference on HLA-G, Paris, France, July 12, 2006.
- *Invited Speaker*, "Trophoblastic tumors- molecular classification and pathogenesis". Biennial Meeting of International Gynecological Cancer Society, Santa Monica, October 17, 2006.
- *Invited Speaker*, "Analyzing ovarian cancer genome- from gene discovery to therapeutic targets". Sloan Kettering Memorial Hospital, New York, December 11, 2006.
- *Distinguished Visiting Professor*, "Ovarian cancer- molecular pathways, diagnostic markers and therapeutic targets". Pathology Grand Round, Emory University, March 9, 2007.
- *Distinguished Visiting Professor*, "New concept in ovarian cancer- the dualistic pathway and its implications". Pathology Grand Round, Yale University School of Medicine, April 19, 2007.
- *Invited Speaker*, "Translational Research and New Diagnosis in Ovarian Cancer". The 12<sup>th</sup> Taiwan Joint Cancer Conference (Gynecologic Oncology section), Taipei, Taiwan, May 5, 2007.
- *Invited Speaker*, "Genomic analysis of ovarian cancer from marker discovery to translational applications". Taipei Medical University, Taipei, Taiwan, May 3, 2007.
- *Invited Speaker*, "Analyzing Ovarian Cancer Genome for Marker Discovery". International Symposium on Biomarkers Discovery in Human Cancers, Tainan, Taiwan, May 7, 2007.
- *Invited Speaker*, "Analyzing ovarian cancer genome for therapeutic target discovery". 12<sup>th</sup> annual meeting of SCBA, University of Maryland Shady Groove Conference Center, MD, June 2, 2007.
- *Invited Speaker*, "Update in gestational trophoblastic disease". Surgical Pathology Update, Leipzig, Germany, June 15, 2007.
- *Invited Speaker*, "The roles of NAC-1 in chemoresistance in ovarian carcinoma". The Montebello Conference, Norway, June 18, 2007.
- *Invited Speaker*, "Exploring ovarian cancer genome- from marker discovery to therapeutic targeting". Symposium of Toronto Ovarian Cancer Research Network/University of Toronto Health Network, Toronto, Canada, November 2, 2007.
- *Invited Speaker*, "Biological and clinical significance of Rsf-1 gene amplification in ovarian cancer". Grand Round at the Cancer Institute of New Jersey, April 2, 2008.
- *Invited Speaker*, "Analyzing cancer genome to identify new cancer-associated genes in ovarian cancer". In the series of Molecular Pathology seminar, University of Maryland at Baltimore, Baltimore, April 11, 2008.
- *Invited Speaker*, "Molecular etiology of drug resistance in ovarian cancer". Symposium on Ovarian Cancer Research, Medical University of South Carolina, Charleston, South Carolina, May 2, 2008.

- *Invited Speaker*, "Identifying new cancer genes through analyzing cancer genomics- Rsf-1 amplification in ovarian cancer". National Health Research Institution, Taiwan, August 5, 2008.
- *Invited Speaker*, "Early detection and treatment of ovarian cancer: shifting from early stage to minimal volume of disease based on a new model of carcinogenesis". 7<sup>th</sup> Biennial Ovarian Cancer Symposium, Marsha Rivkin Center for Ovarian Cancer Research, Charleston, Seattle, Washington, September 4-5, 2008
- *Invited Speaker*, "Functional genomic analysis of ovarian cancer", in honor of Dr. Meenhard Herlyn's achievement in cancer research, The Wistar Institute, Philadelphia, PA, August 10, 2009
- *Invited Speaker*, "Notch3 signaling in ovarian cancer", Institute of Genomic Medicine, China Medical University, Taiwan, August 21, 2009
- *Invited Speaker*, "Targeted therapy in ovarian cancer", Ovarian Cancer SPORE meeting, Fox Chase Cancer Center, Philadelphia, PA, September 26, 2009
- *Invited Speaker*, 7<sup>th</sup> International Seminar at Lake Hamana- Surgical and Molecular Pathology of the Endometrium, Placenta, and Ovary. "Pathology of gestational trophoblastic diseases", and "Molecular pathogenesis of ovarian cancer", Hamamatsu, Shizuoka, Japan, November 7, 8, 2009
- *Invited Speaker*, "Gestational trophoblastic diseases", Grand Round in the Department of Pathology, Memorial Sloan-Kettering Cancer Center, New York, NY, December 7, 2009
- *Invited Speaker*, "The origin and pathogenesis of epithelial ovarian cancer- a proposed unifying theory", Grand Round, Department of Gynecologic Oncology, MD Anderson Cancer Center, Houston, TX, February 1, 2010
- *Invited Speaker*, "Definition and characterization of low-grade and high-grade ovarian serous carcinomas", 2<sup>nd</sup> Annual European Gynecologic Oncology Congress, Athens, Greece, February 12-13, 2010
- *Invited Speaker*, "Clear cell carcinoma of the ovary", Gynecologic Pathology Specialty Conference, United States & Canadian Academy of Pathology, 99<sup>th</sup> annual meeting. Washington DC, March 20-26, 2010
- *Invited Speaker*, "Molecular pathology of ovarian clear cell carcinoma", University of British Columbia, Vancouver, Canada, June 24, 2010
- *Invited Speaker*, "The origin and pathogenesis of epithelial ovarian cancer- a proposed unifying theory", Fox Chase Cancer Center, Philadelphia, July 15, 2010
- *Invited Speaker*, "The origin and pathogenesis of epithelial ovarian cancer- a proposed unifying theory", Department of Pathology, Chang-Gang Memorial Hospital at Kaohsiung, Taiwan, August 12, 2010
- *Invited Speaker*, "The biological roles of NAC1 in cancer pathogenesis", Department of Developmental Biology and Regeneration Medicine, Mount Sinai School of Medicine, New York City, New York, September 2, 2010
- *Invited Speaker*, "Chromatin remodeling in ovarian cancer", Department of Molecular and Cellular Biology, Rutgers University, New Jersey, January 11, 2011
- *Invited Speaker*, "Genomic analysis of gynecological cancer", National Cancer Research Center, Tokyo, Japan, June 30, 2011
- *Invited Keynote Speaker*, "Ovarian cancer is an imported disease- fiction or fact", The 10<sup>th</sup> annual meeting of targeted therapy in gynecologic oncology, Izumo, Shimane, Japan, July 2, 2011
- *Invited Keynote Speaker*, "Pathogenesis of ovarian clear cell carcinoma", The 10<sup>th</sup> annual meeting of targeted therapy in gynecologic oncology, Izumo, Shimane, Japan, July 2, 2011

- *Invited Speaker*, "Diagnosis of biological implication of serous tubal intraepithelial carcinoma", Chang-Kung Memorial Hospital, Kaohsiung, Taiwan, July 6, 2011
- *Invited Speaker*, "Ovarian cancer genetics- latest insight", The Boehringer Ingelheim Conversations in Oncology, Vienna, Austria, October 28-29, 2011
- *Invited Speaker*, "Integrated molecular analysis of ovarian cancer", Virginia Polytechnic Institute and State University, Arlington, Virginia, February 22, 2012.
- *Invited Speaker*, "Intertumoral heterogeneity- how many types of cancers do my patients have?" In the symposium of "Intratumoral and intertumoral heterogeneity in ovarian cancer", American Association for Cancer Research (AACR) annual meeting, Chicago, April 2, 2012
- *Invited Speaker*, "Genomic landscape in gynecologic cancer and its biological and translation implications", Department of Pathology and Laboratory Medicine, University of California at Irvine, April 16, 2012.
- *Lecture*, "Molecular analysis of serous tubal intraepithelial carcinoma", the 3<sup>rd</sup> Johns Hopkins Ovarian Cancer Symposium, Baltimore, Maryland, May 18, 2012.
- *Invited Keynote Speaker*, "Endometriosis-related ovarian cancer", The 16<sup>th</sup> Korea-Japan, the 2<sup>nd</sup> Korea-Taiwan-Japan Joint Conference for Gynecological Pathology, Kumamoto University, Kumamoto City, Japan, May 26, 2012.
- *Invited Speaker*, "Genomic landscape in gynecologic cancer- a road map to new therapeutics", Bristol-Myers Squibb Lectureship, Kumamoto City, Japan, May 27, 2012.
- *Invited Speaker*, "Genomic landscape in gynecologic cancer- a road map to new therapeutics", Kyoto University, Kyoto, Japan, May 29, 2012.
- *Invited Keynote Speaker*, "Genomic analysis of gynecological cancer and their clinical implications", In annual meeting of Korean Division of International Association of Pathologists, Seoul, South Korea, October 18, 2012.
- *Invited Speaker*, "The tumor suppressor role of ARID1A in human cancer", Kyung Hee University, Seoul, South Korea, October 18, 2012.
- *Invited Speaker*, "The tumor suppressor role of ARID1A in human cancer", Korean National Cancer Center, Seoul, South Korea, October 19, 2012.
- *Invited Speaker*, "The origin of ovarian cancer- clear cell carcinoma", International Society of Gynecologic Pathologists companion meeting of United States and Canadian Association of Pathology annual meeting, Baltimore, Maryland, March 3, 2013.
- *Invited Speaker*, "Genomic landscape of ovarian cancer and its translational implications", The Wistar Institute, Philadelphia, April 15, 2013.
- *Invited Speaker*, "Molecular alterations in serous tubal intraepithelial carcinoma", 4<sup>th</sup> Ovarian Cancer Symposium, the Memorial Sloan Kettering Cancer Center, New York, May 15, 2013.
- *Invited Speaker*, "Emerging therapeutics in gynecologic cancer", China Medical University, Taichung, Taiwan, July 7, 2013
- *Invited Speaker*, "Bokhman's dualistic model of endometrial carcinoma- revisited", Chang-Kung Memorial Hospital, Kaohsiung, Taiwan, July 8, 2013
- *Invited Speaker*, "Genomic analysis and pathogenesis of uterine carcinoma", Taipei Veterans General Hospital, Taipei, Taiwan, July 11, 2013.
- *Invited Speaker*, "The Genomic landscape and origin of ovarian cancer", The 18<sup>th</sup> Taiwan Joint Cancer conference, Taipei, Taiwan, July 13, 2013.
- *Invited Lecturer*, "The origin and pathogenesis of ovarian cancer", The 2013 International Diagnostic Pathology Course, Tokyo, Japan, July 14, 2013.
- *Invited Speaker*, "Ovarian cancer is an imported disease- fiction or fact?" Charite Hospital (Mitt campus), Berlin, Germany, September 11, 2013

- *Invited Lecturer*, "Various topics in gynecologic pathology and oncology", Nederland Master Class in ovarian cancer. Berlin, Germany, September 12, 2013
- *Invited Lecturer*, "Understanding the molecular mechanisms in the development of chemoresistance in cancer", Rush University Medical Center, Chicago, October 30, 2013
- *Invited Speaker*, "Ovarian cancer is an imported disease – translational implication and beyond", Ovarian Cancer SPORE meeting, MD Anderson Cancer Center, Houston, TX, May 28, 2014
- *Invited Speaker*, "The cell of origin of ovarian high-grade serous carcinoma". Tzu-Chi Hospital, Hui-Lien, Taiwan, June 20, 2014
- *Invited Speaker*, "Molecular pathogenesis of high-grade serous carcinoma". Symposium of the semiannual National Gynecologic Oncology Group (GOG, now NGR) meeting. Symposium title: "New paradigms in the pathogenesis of high-grade serous carcinoma: translating biological advances into prevention". Chicago, IL. July 9, 2014
- *Invited Speaker*: "ARID1A, a new tumor suppressor, in Type I ovarian cancer" In 2014 5<sup>th</sup> Ovarian Cancer Symposium, Toronto, Canada. September 22, 2014.
- *Invited Speaker*, "The origin and molecular biology of ovarian cancer: the role of fallopian tube". In 2014 Gynecologic Cancer Survivors Course, Baltimore, MD, September 27, 2014.
- *Grand Round Speaker*, "Chromatin remodeling and tumor suppression- a cross talk of genetics and epigenetics" Pathology Grand Round, Johns Hopkins Medical Institutions, October 20, 2014.
- *Invited Special Lecturer*, "New paradigm in the origin of ovarian carcinoma- from molecular to clinical implications". The 128th Meeting of the Kanto Society of Obstetrics and Gynecology, Matsumoto City, Nagano, Japan, October 25-26, 2014.
- *Invited Special Lecturer*, "The biology of ARID1A, a chromatin remodeling gene, in tumor suppression". National Sun Yat Sen University, Kaohsiung City, Taiwan. October 28, 2014.
- *Invited Speaker*, Talk-1 "Molecular prognostic factors: Will it affect treatment decision?" Talk-2 "Genetic innovations in screening for ovarian cancer" Talk-3 "Pathology evaluation of gestational trophoblastic neoplasia", Turkish GOG Congress, Antalya, Turkey. November 20-22, 2014.
- *Invited Speaker*, "Molecular etiology and pathogenesis of ovarian cancer". In 2014 Ella T. Grasso Memorial Conference New Haven, CT, December 3, 2014.
- *Invited Speaker*, "Molecular innovations for early detection of gynecologic cancer using cervical cytology specimens". 2015 Conference of Chinese Society of Colposcopy and Cervical Pathology. Beijing, China, May 22-24, 2015.
- *Invited Speaker*, "Molecular Classification of Ovarian Cancer". Qilu Hospital of Shandong University. China, May 26, 2015.
- Invited Speaker, "Translational Implications of Genomic Analysis in Gynecologic Cancer". CGMH-Kaoushiang, Taiwan, May 16, 2015.
- Invited Speaker, topic 1: "Intermediate trophoblastic tumors and tumor-like lesions" topic 2: "The dualistic model of ovarian carcinogenesis, revisited, revised and expanded" In Professor TY Chen Memorial Symposium, Taipei Medical University, Taipei, Taiwan, June 27, 2015.
- Invited Seminar Speaker, "Targeting SYK as a new strategy to sensitize paclitaxel in ovarian cancer". Massachusetts General Hospital (Center for Cancer Research) and Harvard Medical School, Boston, Massachusetts. September 2, 2015.

- Invited Speaker, AACR special meeting- “Endometriosis-associated Ovarian Cancer”. Advances in Ovarian Cancer Research: Exploiting Vulnerabilities. Orlando, Florida. October 19, 2015.
- Grand Round Speaker, “The cell of origin of ovarian cancer- a paradigm shift and clinical implications” Karmanos Cancer Institute, Detroit, MI, March 24, 2016
- Invited Speaker, “Personalized medicine in gynecologic cancer- the challenges and promise” In Taiwan Join Cancer Conference, May 15, 2016.
- Invited Speaker, “The promise of translational gynecologic research at the post-genomic era” Veteran General Hospital- Taipei, Taiwan, May 16, 2016
- Invited Speaker, “Molecular Genetic Landscape of Endometriosis- a time to re-define what is cancer?”, in Asia-Pacific Society of Molecular Immunohistology, December 11, 2016, Taipei, Taiwan.
- Invited Speaker, “Molecular Genetic Landscape of Endometriosis” First Congress of Taiwan Endometriosis Society, December 17, 2016.
- Invited Distinguished Grand Round Speaker, “Molecular Genetic Landscape of Endometriosis” Thomas Jefferson University, Philadelphia, January 4, 2017.
- Invited Speaker, “Early detection of ovarian cancer in BRCA1/2 carriers”, the annual Basser Symposium for BRCA research. Philadelphia, May 4, 2017.
- Invited Speaker and Visiting Lecturer, “Various topics of Gynecologic Pathology”, Mongolian National University Medical School, Ulaanbaatar, Mongolia, June 19- 22, 2017.
- Invited Speaker, “The Pathology of Human Suffering”, in Professor Huang Memorial Lecture of Pathology, Taipei Medical University, Taipei, Taiwan, June 28, 2017.
- Invited Speaker, “Molecular etiology in ovarian clear cell and low-grade serous carcinomas”, NRG Oncology Semi-Annual Meeting, Philadelphia, Pennsylvania, July 13, 2017.
- Invited Speaker, “Molecular diagnostics of ovarian cancer using cervical-vaginal fluid”, in NIH/NCI EDRN meeting. Seattle, Washington, September 12, 2017.
- Invited Speaker, “PapGene and PapDREAMing for early detection of ovarian cancer”, AACR Special Conference: Addressing critical questions in ovarian cancer research and treatment. Pittsburgh, Pennsylvania, October 3, 2017.
- Invited Speaker, “Somatic mutations in ovarian cancer precursors including STIC in the absence of carcinoma.” At 6<sup>th</sup> US Department of Defense Ovarian Cancer Research Program Ovarian Cancer Consortium Mini-symposium, New York University Medical Center, New York City, October 27, 2017.
- Invited Speaker, “Cancer Implications for Patients with Endometriosis”, in the symposium of “Breast, Ovary & Endometriosis: Investigating the role of sex hormones in the etiology and treatment”. New York City, October 28, 2017.
- SKCCC Translational Cancer Seminar, “Translational implications of analyzing mutation landscape in gynecologic cancer precursors”, Department of Oncology, Johns Hopkins Medical Institutions, November 9, 2017
- Grand Round Speaker, “Endometriosis- New Biology and Questions”, Department of Gynecology, Greater Baltimore Medical Center, Baltimore, Maryland, November 17, 2017
- Invited Speaker, “Cancer-driver mutations in endometriosis”. American Association of Gynecologic Laparoscopists (AAGL)-Beijing meeting, Beijing, China, December 9, 2017.
- Invited Speaker, “The Origin of Endometriosis- new insights into an old question”, Taiwan Endometriosis Society (TES) 2017 Annual Meeting, December 10, 2017.

- Grand Round Speaker, "Endometriosis-related ovarian neoplasms" Memorial Sloan Kettering Comprehensive Cancer Center Gynecologic Oncology, New York City, February 8, 2018.
- Emerging Frontiers in Biomedical Research Seminar Series, "Molecular landscape in endometriosis". RWJMS Basic Science Departments, Rutgers University/Robert Wood Johnson Medical School, Piscataway, New Jersey, March 20, 2018.
- Translational Medicine Institute, "Translational medicine- the time is now". Taipei Medical University, April 17, 2018.
- The Tina Brozman Ovarian Cancer Research Consortium Symposium, "Integration of advanced genomic and bioengineering approaches for early detection and prevention of ovarian cancer" and "Applying DREAMing to detect epigenetic markers in ovarian cancer". New York City, May 7, 2018.

Scheduled:

- Invited Speaker, 2018 AAGL International Conference. "Clonal origin of adenomyosis and endometriosis" Beijing, China, September 12-16, 2018.
- Invited Speaker, Mini-symposium on endometriosis of SRI meeting. "Genetic landscape of endometriosis- new insights from genome-wide mutation analysis." Paris, France. March 12-16, 2019.